CRI Cancer Research Institute™

2026 CRI LLOYD J. OLD

STARs

Uniting for a World Immune to Cancer

The CRI Lloyd J. Old STAR Program

The Cancer Research Institute (CRI) Lloyd J. Old STAR Program (**S**cientists **TA**king **R**isks) empowers bold and visionary science that has the potential to fundamentally transform the field of cancer immunology and result in more lives saved. With grants of $1.25 million over five years, CRI enables STARs to pursue high-risk, high-reward research that otherwise would go unfunded, providing a significant degree of freedom and flexibility to exceptional tenure-track scientists who are working at the forefront of discovery and innovation in cancer immunotherapy.

Launched in 2019, the CRI STAR Program is named in memory of CRI's founding scientific and medical director, whose vision and expertise guided CRI's programs for forty years. Dr. Old is universally recognized as the "Father of Modern Tumor Immunology", and his lifelong passion for scientific excellence created a legacy that lives on through each of these STARs.

42
Scientists have been named CRI STARs hailing from

26
academic research institutions across

10 U.S. States | **5** Countries

New awards are made annually, with a total of $53+ million invested so far. The enclosed profiles provide a glimpse into the STAR Class of 2026 and their innovative research and remarkable approaches to exploring today's most important questions in cancer immunology.

A Letter from Our CEO

Each year, the CRI looks beyond today's discoveries to identify the scientists who will shape tomorrow's breakthroughs. The researchers selected as CRI Lloyd J. Old STARs share more than exceptional scientific talent — they possess the curiosity, creativity, and courage to pursue ambitious questions that could redefine what is possible in cancer immunotherapy.

It is my pleasure to introduce the STAR Class of 2026 — five outstanding investigators whose work exemplifies the bold thinking that drives scientific progress. Their research spans some of the most exciting frontiers in cancer immunology, from uncovering new mechanisms of immune regulation to developing innovative therapeutic strategies and revealing vulnerabilities that could lead to more effective treatments. Together, they represent the future of discovery.

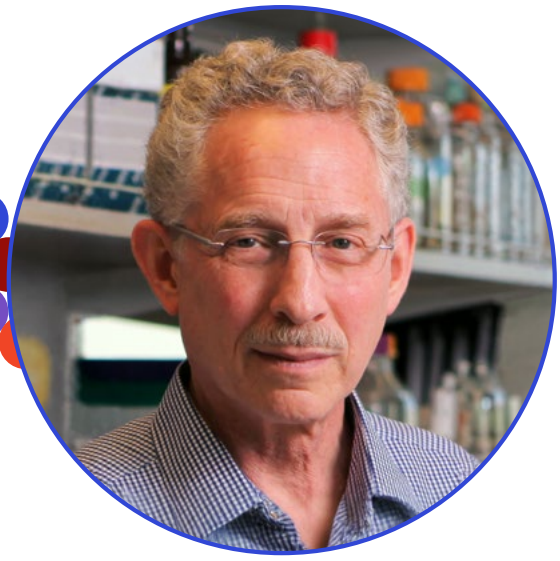
Each STAR will receive $1.25 million in unrestricted funding over five years. This long-term investment reflects CRI's belief that transformative science flourishes when exceptional researchers have the freedom to follow the evidence wherever it leads. By investing in people rather than predefined projects, we empower scientists to take the kinds of risks that often lead to the field's most important advances.

As you learn more about this remarkable group of investigators, I hope you share my excitement for what lies ahead. We are proud to support these scientific leaders at this pivotal moment in their careers, and we look forward to the discoveries they will make — and the patients whose lives those discoveries may ultimately change.

With admiration,

Alicia Zhou, PhD
Chief Executive Officer
Cancer Research Institute

Insights from CRI's Scientific Advisory Council



> This gives them the immense advantage of flexibility to pursue an idea that's so far ahead of the pack that a conventional NIH Study Section would hesitate to endorse it.

Carl F. Nathan, MD
Professor and Chairman,
Microbiology and Immunology, Weill Cornell Medicine
Associate Director, CRI Scientific Advisory Council

> What excites me most is that these rising STARs aren't just keeping pace with the field – they're charting its course.

Elizabeth M. Jaffee, MD
Professor and Deputy Director,
The Sidney Kimmel Comprehensive Cancer Center
Johns Hopkins University School of Medicine
Associate Director, CRI Scientific Advisory Council

Julie Deutsch, MD

Lloyd J. Old STAR | Johns Hopkins University

Project Title:

An integrated tissue framework for assessing pan-tumor immunotherapy response to support personalized cancer care

Relevance:

Breast Cancer, Colorectal Cancer, Lung Cancer, Melanoma

Project Summary:

Immunotherapy is increasingly being used to treat cancer earlier in the course of disease, including before and after surgery. However, doctors still lack reliable tools to determine whether these treatments are truly working for individual patients. As a result, some patients receive unnecessary additional therapies while others may miss opportunities for more effective treatment.

Dr. Deutsch's research seeks to solve this problem by developing a new tissue-based system for measuring response to immunotherapy across many different cancer types. Rather than focusing on one specific cancer, her goal is to create a broadly applicable framework that can accurately assess treatment response using routine pathology samples already collected in hospitals. The project combines advanced multispectral imaging, artificial intelligence, and standard pathology slides to analyze how tumors and immune cells change during treatment. By integrating these technologies, Dr. Deutsch hopes to provide doctors with clearer and more personalized information about whether a patient's therapy is succeeding. Importantly, this approach is designed to be practical and scalable using tools that are already widely available in clinical settings.

If successful, Dr. Deutsch's research could help doctors make better treatment decisions, reduce unnecessary side effects, and improve outcomes for patients receiving immunotherapy. Beyond patient care, her work may also accelerate clinical trials and improve how new cancer therapies are evaluated across multiple cancer types.

> "To have the support of CRI and the belief in what we're building, and how we're working to change the landscape for cancer patients is really so important, especially in today's current climate.

Justin Eyquem, PhD

Lloyd J. Old STAR | University of California, San Francisco

Project Title:

In vivo engineering and programmable signaling to enhance T cell-based cancer therapy

Relevance:

Gastrointestinal Stromal Tumor (GIST), Multiple Myeloma, Non-Hodgkin Lymphoma, Uterine Sarcoma

Project Summary:

Chimeric Antigen Receptor (CAR) T-cell therapy has revolutionized treatment for some blood cancers, but current approaches remain extremely complex, expensive, and difficult to apply to solid tumors. Currently, CAR T-cell therapy requires removing immune cells from a patient, engineering them in a laboratory, and then reinfusing them back into the body — a time-consuming and costly process that limits access for many patients.

Dr. Eyquem's research aims to fundamentally transform how engineered T-cell therapies are delivered. His team has developed the first method capable of generating CAR T cells directly inside the body, potentially eliminating the need for individualized cell manufacturing.

The project will build on this breakthrough by optimizing the in vivo engineering system for both CAR and T cell receptor (TCR) therapies while improving efficiency, scalability, and effectiveness against solid tumors, where current treatments often fail. Additionally, the work aims to redesign how engineered T cells process signals so they can remain active longer within the hostile tumor environment.

The project will generate large datasets linking T cell design to therapeutic performance, used to train AI systems capable of designing even more effective future therapies. This work has the potential to dramatically expand access to T cell immunotherapy, reduce costs, and accelerate the development of safer and more powerful immune-based cancer treatments.

> "This funding will help us accelerate testing many more TCRs, identifying the best combinations of them, how to boost them in vivo, and potentially combine them with cancer vaccines, and that is something that I'm really excited about.

Jennifer Guerriero, PhD

Lloyd J. Old STAR | Brigham and Women's Hospital

Project Title:

Turning the innate immune system against itself: CAR-monocytes targeting tumor macrophages

Relevance:
Breast Cancer, Lung Cancer, Pancreatic Cancer

Project Summary:

Many tumors are surrounded by immune cells called tumor-associated macrophages (TAMs), which often help cancers grow, spread, and evade the immune system. These macrophages can block T cells from entering tumors and contribute to resistance against immunotherapy. While TAMS have been long recognized as an important target, current therapies have been unable to effectively eliminate these harmful cells.

Dr. Guerriero's laboratory has identified a group of TAMs expressing a molecule called TREM2. These macrophages are found across many solid tumors but are largely absent from normal tissues, making them an attractive therapeutic target. To attack these cells, Dr. Guerriero has developed an innovative strategy that engineers a patient's own monocytes — immune cells that naturally enter tumors — with a chimeric antigen receptor (CAR). These engineered monocytes are designed to recognize and eliminate TREM2-positive macrophages inside tumors.

Early studies in mice have already shown promising results, including tumor shrinkage, improved survival, and stronger T cell activation. This project will focus on confirming safety and effectiveness, improving the engineered cells by adding immune-stimulating cytokines, and developing a clinical-grade product suitable for patient testing. This work could establish an entirely new form of cellular immunotherapy aimed not at cancer cells directly, but at dismantling the tumor's protective immune environment and restoring the body's ability to fight cancer.

> "We're excited about using your own monocytes to overcome cancer therapy resistance and enhance immune responses. This funding is not like any other type of funding, and we're going to use it to find strategies to overcome immunotherapy resistance.

Mohammad Rashidian, PhD

Lloyd J. Old STAR | Dana-Farber Cancer Institute

Project Title:

Discovery of a signaling hub that unlocks durable, exhaustion-resistant anti-tumor T-cell immunity

Relevance:
Solid Tumors

Project Summary:

T cell therapies have shown enormous promise in cancer treatment, but they often fail against solid tumors. This is in part due to exhaustion: T cells gradually lose their ability to persist, multiply, and continue attacking cancer, limiting long-term effectiveness.

Dr. Rashidian's research centers on a newly discovered signaling system inside T cells that appears to control whether these immune cells remain strong and long-lasting or become exhausted. Early findings suggest this signaling hub coordinates multiple pathways that help T cells maintain stem-like qualities, survive longer, and sustain potent anti-tumor activity. This project will define how the signaling hub functions and why it enables T cells to resist exhaustion even within the hostile environment of solid tumors.

By understanding how durable T cell responses are naturally maintained, this work could guide the development of next-generation immunotherapies capable of producing longer-lasting anti-cancer responses.

Much like the original discovery of immune checkpoints transformed cancer therapy, this newly identified signaling pathway may open an entirely new therapeutic direction for overcoming T cell exhaustion and improving outcomes for patients with solid tumors.

> "T cell exhaustion remains a major challenge. If we can understand how to potentially inhibit T cell exhaustion, or reverse that exhaustion, it can unlock a lot of potential for developing next-generation immunotherapeutics.

Aaron Whiteley, PhD

Lloyd J. Old STAR | University of Colorado at Boulder

Project Title:

Impact of cryptic enzymes from the microbiome on cancer immunotherapy

Relevance:
Broad Cancer Relevance

Project Summary:
The bacteria that live inside our bodies — collectively known as the microbiome — play a major role in human health, including how patients respond to cancer immunotherapy. Yet scientists still do not fully understand how bacteria communicate with the immune system or why certain microbes improve responses to treatment while others do not.

Dr. Whiteley studies the molecular "language" bacteria use to influence human immune signaling. Over the past decade, his laboratory helped uncover that some important human immune pathways actually originated in bacteria more than a billion years ago. One of these shared pathways, called cGAS-STING, is now recognized as a critical driver of successful cancer immunotherapy. This project focuses on newly discovered bacterial enzymes that produce molecules capable of activating the human STING pathway. Dr. Whiteley will identify these bacterial compounds and build experimental systems to understand precisely how they influence immune responses.

The long-term goal is to translate this molecular communication system between bacteria and human cells — essentially creating a "Rosetta Stone" for microbiome-immune interactions. Using this knowledge, Dr. Whiteley hopes to design customized probiotics that can boost anti-cancer immunity and improve patient responses to existing immunotherapies. This research could open an entirely new frontier in cancer treatment by harnessing beneficial bacteria to strengthen the immune system and make immunotherapy more effective for many patients.

> "The STAR program means we're going to be able to take the leaps we proposed, probably find some new leaps that we didn't know where we're coming, and spend time doing the science that's actually going to move the needle.

Reflections from Current CRI STARs

Too often we prioritize the safe, incremental questions – that approach limits progress towards eradicating cancer. The STAR program gives us the opportunity to ask paradigm-shifting questions, and that's exactly what's needed to move the field forward.

Tuoqi Wu, PhD
Assistant Professor of Immunology,
The University of Texas Southwestern Medical Center
CRI STAR Class of 2025

One of the biggest challenges in cancer research is the need to make bold ideas appear polished and low-risk to secure funding. But real innovation is rarely linear. The STAR award offers the freedom to pursue transformative ideas as they develop and evolve.

Ryan Flynn, MD, PhD
Principal Investigator, Stem Cell Program, Boston Children's Hospital
Assistant Professor of Stem Cell and Regenerative Biology, Harvard University
CRI STAR Class of 2025

About CRI

The Cancer Research Institute (CRI) is a nonprofit organization dedicated to advancing the field of cancer immunotherapy through rigorous scientific research and global collaboration. Since 1953, CRI has been instrumental in uncovering the fundamental biology of the immune system and its application to cancer treatment, laying the groundwork for breakthroughs such as checkpoint blockade, cancer vaccines, and engineered cell therapies.

CRI's mission is to create a world immune to cancer by driving scientific discovery, accelerating collaboration, and turning breakthroughs into life-saving treatments. Our work sits at the intersection between discovery and patient impact, ensuring that scientific innovation translates into real-world treatments.

To date, CRI has committed over $600 million to research impacting more than 30 cancer types. Our funding strategy is built on the framework of People × Biology × Data: supporting world-class scientists, deepening understanding of tumor-immune system interactions, and harnessing data to guide discovery and translation. By uniting these elements, CRI catalyzes innovation through our global research ecosystem to drive the next generation of discoveries forward.

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